2, the thread flanks of the exterior threads 12 of the screw 11 and the interior threads 8 of the pick-up shaft 2 cause the slit end of the pick-up shaft 2 to spread open.

If twisting of the coding disk 3 is to be avoided during the clamping operation between the pick-up shaft 2 and the driveshaft 9, means 16 can be provided on the pick-up shaft 2 with which the pick-up shaft 2 is held, fixed again relative rotation, when the screw 11 is turned. These means 16 can be specially shaped recesses on the pick-up shaft 2, which are accessible to a tool. This tool can be hand-held during assembly, but can also be designed such that it automatically causes clamping between the pick-up shaft 2 and the stator 1 during the assembly of the two shafts 2 and 9. For example, a set of pick-up holes for use with a spanner wrench or a set of flats for use with an open-end or box end wrench could be used. Alternatively, it may also be possible to make a wrench that fits like a cap over the top of the encoder to allow the locking of the pick-up shaft 2 as discussed above as well as engaging a similar feature or fixation point on the outside body of the stator 1. Such a configuration would allow the use of automated tooling.

FIG. 2 illustrates an exploded view of a portion of the measuring system shown in FIG. 1 which illustrates the principle operation of the shaft clamping according to a preferred embodiment of the present invention.

If the screw 11 has been turned into the pick-up shaft 2 up to the detent 14, 15, the surface 14 of the screw head 13 is pressed against the surface 15 of the pick-up shaft 2. With further turning of the screw 11 a longitudinal force of tension F1 appears at the thread flanks 12 of the screw 11. (FIG. 2) The thread flanks 12 are inclined at an angle θ, for example 30°, to the force F1, which results in components of this force being developed both normal and parallel to the contact surface 17 defined by the exterior threads 12 of the screw 11 and interior threads 8 of the pick-up shaft 2.

The force F1 has component F1 sin θ normal to surface 17, and F1 cos θ parallel to surface 17. (See FIG. 3). Similarly, the force F1 cos θ has component F2=F1 cos θ sin θ which is at right angles to F1. The force F2 created by the longitudinal force on screw 11 has an equal and opposite force F2' created by the resistance of the pick-up shaft, threads. These two forces attempt to force the slotted portion of the pick-shaft away from the screw but this motion is constrained by the surface of the bore 10 in driveshaft 9.

The surfaces 14 and 15 of the screw 12 and shaft 2, respectively constitute an axially acting detent, up to which the screw 11 can be turned into the pick-up shaft 2. Furthermore, the touching surfaces 14, 15 form relatively large friction surfaces in the clamped state of the pick-up shaft 2, which are located on a relatively large radius, so that a large unscrewing moment is achieved on account of the friction. This has the advantage that the clamping will not automatically loosened during operation.

It is to be understood that the forms of the invention described herewith are to be taken as preferred embodiments and that various charges in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of the invention or the scope of the claims.

What is claimed is:

1. An angle measuring system having a coding disk for measuring the angular position of a pick-up shaft and a clamping device for clamping the pick-up shaft, fixed against relative rotation, to a driveshaft of a drive unit, wherein the pick-up shaft has axial slits in the clamping area which can be radially spread open by an actuating element, the system comprising:

a screw being the actuating element which can be turned in the pick-up shaft and which has an exterior thread in the clamping area; and

a corresponding interior thread on the pick-up shaft in the clamping area, wherein the screw has an axially acting detent surface which it is supported against an axial detent of the pick-up shaft during clamping.

2. The angle measuring system according to claim 1 wherein the screw is guided through the pick-up shaft from the end opposite the driveshaft, and the end of the pick-up shaft facing the driveshaft has the slits.

3. The angle measuring system according to claim 1 wherein the pick-up shaft is rotatably seated in a stator of the angle measuring system, and the stator is connected with the stationary element of the drive unit by a coupling in a manner fixed against relative torsion, but radially and axially resilient.

4. The angle measuring system according to claim 3 wherein the coupling is made of spring sheet metal with spring arms extending axially and parallel with each other and constitute a parallel guide which is fixed against relative torsion.

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